TREE TYER

This application claims priority based on U.S. provisional patent application No. 60/396,711 filed on July 19, 2002, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0001] Commercial tree nurseries regularly employ one or other version of "standing baler" apparatus for folding and tying tree limbs for shipping and handling nursery stock. Such apparatus includes means for upwardly deflecting the limbs of a tree while simultaneously spirally tying the tree limbs in a compact bale.

[0002] One example is given in U.S. Patent No. 4,939,989 (Zacharias), which discloses a tree limb folding apparatus which has a base adapted for mounting from an elevatable support (e.g. forklift). That tree limb folding and tying apparatus includes a generally annular horizontal frame operable to receive a lower trunk portion of the tree. The frame includes at least two peripherally adjacent arcuate frame sections which can be pivotally shifted relative to each other between closed and open positions. When open, there is defined a passageway between adjacent ends of the frame sections through which to receive the bole of a tree upon advancing the open frame toward the tree. Once the apparatus is horizontally engaged about a tree, it can be drawn upwardly, deflecting the limbs of the tree into a folded configuration, ready for tying.

[0003] A significant problem arises with standing tree balers that employ pivoting gates or arms to embrace the lower trunk of the tree and then to be drawn upward along the branches, as these mechanisms are vulnerable to distortion at and around the pivot.

SUMMARY OF THE INVENTION

[0004] It is an object of my invention to provide a limb engaging and folding apparatus for a tree tyer (baling apparatus) which is simpler in construction and sturdier in operation than existing such devices.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Figure 1A is a perspective view of a tree limb folding apparatus according to the present invention shown in its closed configuration; and

[0006] Figure 1B is the apparatus of Figure 1A in a configuration which is nearly completely open.

DESCRIPTION OF PREFERRED EMBODIMENT

[0007] The apparatus comprises a base structure 10 which is adapted to be mounted to the elevatable portion of a lift truck or loader. Two hollow, arcuate tube sections 12a and 12b are fixedly mounted in circular orientation to opposite sides of the base structure 10. Passing through tube sections 12a and 12b is a part-circular slider tube 14 of smaller outer diameter than the internal diameter tube sections of 12a and 12b. An arc section of tube 14 has been removed to form a space between ends 14a and 14b which conforms to the fixed spacing between the front ends of arms 12a and 12b. Inner tube 14 can be rotated within the internal channel of 12a and 12b by a hydraulic piston 16 operatively connected to a lever arm 18 which is linked to the rear portion of inner tube 14. Figures 1A and 1B respectively show the device in its closed configuration and a configuration in which it is almost entirely open with end 14b of the inner about to be drawn fully into the interior of tube section 12b.

[0008] Between the inner surface of arms 12a and the outer surface of tube 14 are provided teflon or other bearings for smooth selective rotational motion under hydraulic control.

[0009] The fully opened space at the front of the tubes is typically contrived to be around 14 - 16 inches and the inner diameter between diametrically opposed points on the surface of the outer ring sections 12a and 12b is about 40 - 60 inches.

[0010] When the gap is opened, the apparatus can be horizontally advanced into position about a tree trunk below the branches, then the frame can be closed by actuation of the hydraulic control 16. With the gap closed, a durable circular frame is formed for engaging and upwardly deflecting the limbs of a tree as a apparatus is elevated and allowing the folded branches to be baled.